

ADDITIONS TO AUSTRALIAN *HIBISCUS* (MALVACEAE): A NEW SPECIES AND A NEW RECORD.

L.A. CRAVEN¹ AND P.A. FRYXELL²

¹Australian National Herbarium, CSIRO Division of Plant Industry,
G.P.O. Box 1600, Canberra, ACT 2601, Australia.

²U.S. Department of Agriculture, Agricultural Research Service,
in cooperation with Texas A&M University,
College Station, Texas 77843, USA.

ABSTRACT

A new species, *Hibiscus brennanii* Craven & Fryx., is described and assigned to *Hibiscus* sect. *Trichospermum* Hochr. *Hibiscus lobatus* (Murray) Kuntze is newly recorded for Australia. A partial key to the species of *Hibiscus* in the Northern Territory north of latitude 15°S is provided.

KEYWORDS: Malvaceae, *Hibiscus*, new species, new record, identification key, Australia, Northern Territory.

INTRODUCTION

The known *Hibiscus* L. flora of the Alligator Rivers district in the Northern Territory of Australia is rich in species of *Hibiscus* sect. *Furcaria* DC., with approximately twelve species being recorded to date (Craven and Fryxell, unpublished data). Apart from these, three other species have been recorded for the area by Lazarides *et al.* (1988): *H. microchlaenus* F. Muell. (sect. *Bombicella* DC.), *H. pauduriformis* Burm.f. (sect. *Trichospermum* Hochr.) and *H. tiliaceus* L. (sect. *Azanza* DC.). With the exception of sect. *Furcaria*, new species of which are still being found, the Hibisci of the Alligator Rivers district have been regarded as reasonably well-known.

It was with some surprise, therefore, that L.A. Craven, during a visit with A.V. Snee to Jabiru, Northern Territory, in May 1990, viewed material of an unusual, pink-flowered and densely hairy *Hibiscus* which had been collected the previous month by K. Brennan at Baroalba Creek on Mt Brockman. The opportunity was taken to revisit the population, both to observe it first hand and to collect additional specimens and seed. Subsequently two other collections, apparently from the same area as the population located by Brennan, have been seen; probably a single, extended population is involved. Invest-

igation of these specimens has shown that the Mt Brockman *Hibiscus* represents a new species which is described below as *H. brennanii*.

In recent years, plant exploration of northern Australia has resulted in the collection of two malvaceous species of wide Old World distribution but previously unrecorded for the Australian flora. These species are known currently as *Pavonia burchellii* (DC.) Dyer (Fryxell, 1988) and *Sida parvifolia* DC. (Fryxell, 1987), but recent research indicates that their correct names are *Pavonia calycina* (Cav.) Ulbrich and *Sida pusilla* Cav. respectively (Fryxell, in preparation). To these is now added a third species, *Hibiscus lobatus* (Murray) Kuntze, collected by C.R. Dunlop and G.J. Leach on the west coast of the 'Top End' at Anson Bay, Northern Territory.

The abbreviations 'oss' and 'pl' refer to the herbaria maintained by the Office of the Supervising Scientist at Jabiru, Northern Territory, and P.A. Fryxell at College Station, Texas, respectively.

SYSTEMATICS

Hibiscus brennanii Craven & Fryx., sp. nov.
(Figs 1a-b, 2)

Frutex usque 3 m altus; ramulis aculeolatis et dense stellato-pubescentibus; foliis concoloris; foliis maxime evolutis laminis utrinque dense



Fig. 1. *Hibiscus brennanii*. sp. nov. a, flowering plant (photograph: K. Brennan); b, fruiting plant (photograph: A.V. Slec).

stellato-pubescentibus, ubique late vel latissime ovatis (vade 3-lobatis), usque 15 cm longis et 19 cm latis, palmatim 7-9-nervatis, margine serrato-erenatis, basi cordatis, apice acutis, enectariis; pedicellis basi articulatis; bracteolis involuicellorum 10-13, liberis, spatulatis, usque 20 mm longis; calyce 25-30 mm longo, enectariis, lobis ovatis, longitudine 0.8-0.9 calycem, distincte 3-venosis, venis lateralibus a margine 1-3 mm semotis; capsula ovoidea, 10-12 mm longa; seminibus striatis et minute pectinato-pubescentibus.

Typus: Northern Territory, Kakadu National Park, Mt Broekman outlier, upper Baroalba Creek, sandstone plateau, near wall, 3 May 1990, Slec, Craven & Brennan 3092 (CANB, holo.; A, AD, B, BRI, DNA, E, G, K, L, MEL, NSW, P, PERTH, pf, RSA, US, iso.).

Shrub to 3 m tall, erect. Branchlets aculeolate and densely stellate-pubescent, the aculci 1.5-2 mm long, the stellate hairs 1-1.5 mm long. Stipules deciduous, linear, 5-12 mm long. Leaves colorous. Climax leaves with the petiole densely stellate-pubescent, sometimes aculeolate (the aculci not exceeding the stellate hairs in

length), stout, to 14 cm long; blade densely stellate-pubescent on both surfaces, overall broadly to very broadly ovate, shallowly 3-lobed, to 15 cm long and 19 cm wide, palmately 7-9-nerved, the margin serrate-erenate, the base cordate, the apex acute; foliar nectary lacking. Distal leaves progressively reduced, ultimately sessile, broadly ovate, unlobed. Flowers solitary in the upper leaf axils. Pedicels articulated at the base, densely stellate-pubescent, 8 mm long. Involuicel 10-13-bracteolate, the bracteoles densely stellate-pubescent, free, spatulate, to 20 mm long, 4-6 mm wide. Calyx at anthesis densely stellate-pubescent, 25-30 mm long (in fruit accrescent, to 45 mm long), nectaries absent; lobes ovate, 0.8-0.9 times the length of the calyx, 14-16 mm wide, the lateral veins 1-3 mm from the margin. Petals weakly stellate-pubescent on both surfaces, pink, 7 cm long. Staminal column with glandular hairs, 25 mm long, the filaments distributed throughout its length, 1.5-2 mm long. Styles with glandular hairs, the style arms 3 mm long. Capsule densely hairy (the stout overlapping aculeolate hairs ascending), 10-12 mm long, ovoid. Seed striate and minutely

pectinate-pubescent (the stellate hairs effectively reduced to tubercles, each of which is a comb-like line of very minute curved appressed hairs), angular, 3.5-4.5 mm long (Fig. 1).

Distribution and ecology. Northern Territory: the Mt Brockman area in the South Alligator River district (see Fig. 2).

Recorded as occurring on sandstone with *Asteromyrtus-Paudams-Grevillea-Acacia* shrubland, on the edge of evergreen notophyll vine forest in a narrow shallow gully; and on sandstone slopes with *Acacia, Grevillea* and *spinifex*. Flowering period: March to May.

Other specimens examined. Northern Territory, Kakadu National Park; Mt Brockman, near Baroalba Springs, in a narrow shallow gully, May 1978, *Webb & Tracey 13620* (BRI); along Baroalba Creek, about 3 km NE of gorge entrance on sandstone slopes N of creek, 4 March

1987, *Cuncliff UNSW 20024* (CANB, oss); Baroalba Creek, broken sandstone in gully near water, 16 Apr 1990, *Brennan 131* (oss).

Remarks. *Hibiscus brennanii* superficially appears to belong in sect. *Furcaria*, due to its largish pink flowers, but it has a very different calyx from that of this section (at anthesis the lateral veins on the lobes arc 1-3 mm from the margin and more or less obscure) and has spatulate involucellar bracteoles. In these features the plant is similar to *H. panduriformis*, which belongs in sect. *Trichospermum*. On the other hand, the distinctive pectinate-tuberculate pubescence of the seeds of *H. brennanii* resembles closely that of some species of sect. *Furcaria* (e.g. *H. byrnesii*, *H. heterophyllus*, *H. meraukensis*, *H. splendens*, *H. symonii*). However, the seed pubescence of some specimens of the highly variable *H. panduriformis* (e.g. *Fryxell*,

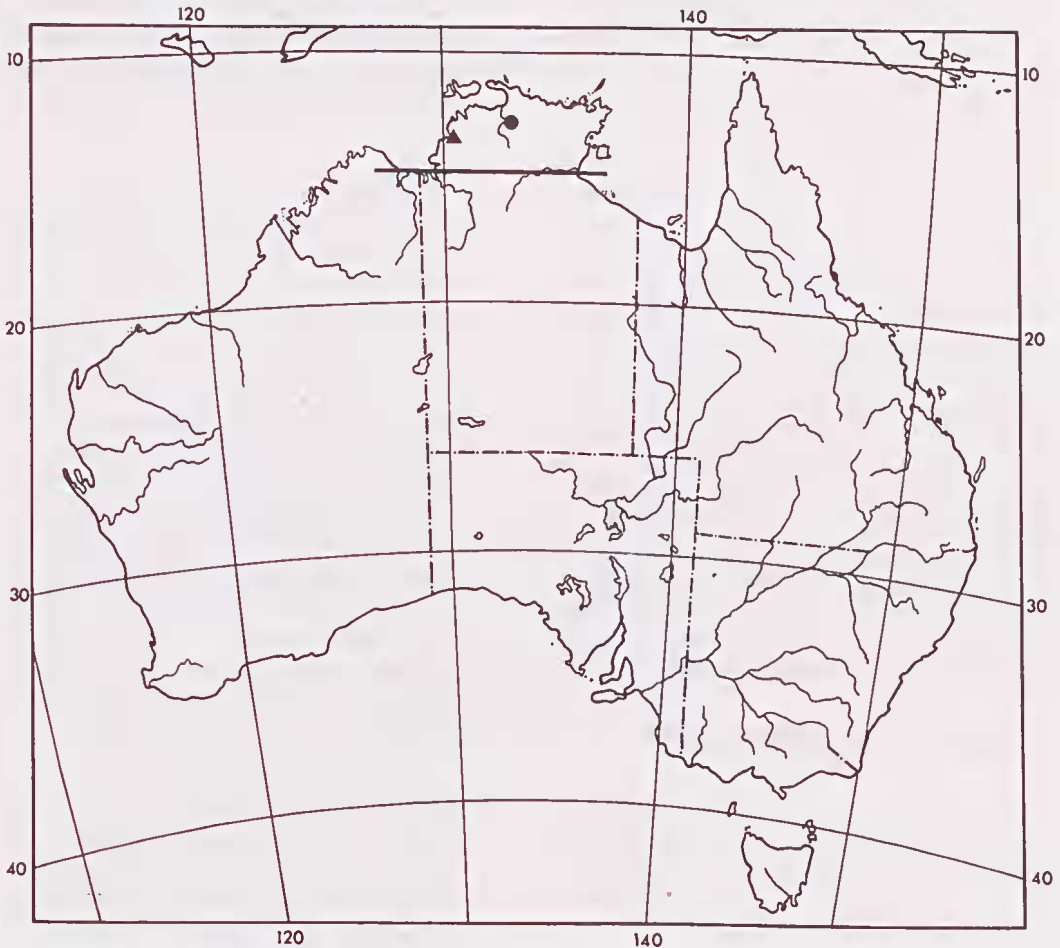


Fig. 2. Distribution of *Hibiscus* species. ●, *H. brennanii* sp. nov. ▲, *H. lobatus* (Murray) Kuntze. The bold line indicates the approximate position of latitude 15° S.

Craven & Stewart 4550, Western Australia, about 5 km NNE of Broome) approaches that of *H. brennanii* in that the hairs are somewhat pectinate, although other representatives of *H. panduriformis* have a looser stellate pubescence. Overall, the morphological evidence indicates an alliance of *H. brennanii* with *H. panduriformis* and not with species of sect. *Furcaria* and we consider the species is most appropriately placed in sect. *Trichospermum*.

What may be the adaptive value of the highly modified seed pubescence in *H. brennanii* and the relevant sect. *Furcaria* species is unknown, but the fact that it crosses sectional lines reduces its taxonomic importance and suggests it is due to parallelism or convergent evolution, or perhaps even introgression. There is also similarity with species of sect. *Furcaria* in the possession of pink corollas, but this is readily understandable in terms of sharing a common guild of pollinators. Confirmation of the sectional placement of *H. brennanii* is being sought from cytological data, since all Australian species of sect. *Furcaria* which have been studied cytologically have $2n = 108$, whereas *H. panduriformis* has $2n = 24$.

Hibiscus brennanii occupies a very similar habitat to that in which the pink-flowered sandstone species of sect. *Furcaria* are commonly found. Areas of open scrubby vegetation with large sandstone blocks (commonly on slopes), gullies, and the base of dissected low cliffs frequently have a species of sect. *Furcaria* as a constituent of their flora. These sites are very well-drained. The *H. brennanii* plants have a life history similar to those of the sect. *Furcaria*. They are killed by fire and regeneration occurs from seed; the resultant plants are erect and open in habit. In contrast, *H. panduriformis* occurs in lowland situations, commonly around the edge of areas of impeded drainage or along drainage lines. *Hibiscus panduriformis* is a perennial, several-stemmed shrub which apparently regrows from the rootstock after fire.

Hibiscus lobatus (Murray) Kuntze
(Fig. 2)

Material. Northern Territory, Anson Bay, 11 km S of Red Cliff, annual herb to about 40 cm on disturbed edge of monsoon thicket, flowers white, 16 Feb 1989, Dunlop & Leach 8010 (CANB; BRI, DNA, K, MEL, NSW, n.v.).

Distribution and ecology. Borssum Waalkes (1966) gave the distribution of *H. lobatus* as

being tropical Africa, Madagascar and adjacent islands, and southeast Asia (in Malesia restricted to central and east Java). The species was stated by Borssum Waalkes to be characteristic of regions with a severe dry season. Its Australian location is also subject to a strongly seasonal climate. *Hibiscus lobatus* belongs in sect. *Solandra* (Murray) Hochr. and constitutes the first Australian record of the section.

The Dunlop and Leach collection agrees with the description of *H. lobatus* given by Borssum Waalkes as far as its essential features are concerned.

Key to the species of 'Top End' *Hibiscus*.

A partial identification key is presented for the *Hibiscus* species of the Top End of the Northern Territory. For the purposes of this key we have defined arbitrarily the Top End as that part of the Territory lying north of latitude 15° S (see Fig. 2). An account of the species of *H. sect. Furcaria* of north and northwestern Australia is currently in preparation and the inclusion in this key of the Northern Territory representatives would be premature.

- 1 a Calyx lobes with strongly prominent marginal veins.....sect. *Furcaria*
- b Calyx lobes without strongly prominent marginal veins.....2
- 2 a Involucel present, often well-developed ...
.....3
- b Involucel suppressed..... *H. lobatus*
- 3 a Plant a tree with conspicuous ovate to oblong stipules (these soon deciduous, leaving distinct scars) *H. tiliaceus*
- b Plant a shrub or herb with relatively inconspicuous, filiform to awl-shaped to linear stipules (these generally persistent, if deciduous then leaving indistinct scars)4
- 4 a Midstem leaves unlobed or shallowly lobed5
- b Midstem leaves deeply 3-5-lobed or 3-5-foliolate7
- 5 a Involucellar bracteoles acicular to narrowly oblong; capsule papillate, whether or not also slightly aculeolate; corolla less than 4 cm long, mauve to pink *H. microchlaenus*
- b Involucellar bracteoles spatulate to narrowly oblong; capsule densely

- aculeolate, not papillate; corolla more than 4 cm long, yellow or pink 6
- 6 a Distal leaves on flowering shoots distinctly petiolate, leaves discoloured, corolla yellow *H. panduriformis*
- b Distal leaves on flowering shoots sessile or subsessile, leaves concolorous, corolla pink *H. brennanii*
- 7 a Midstem leaves deeply 3-5-lobed (rarely foliolate), involucellar bracteoles distinctly shorter than the calyx at anthesis *H. geranioides*
- b Midstem leaves 3-5-foliolate, involucellar bracteoles distinctly longer than or equalling the calyx at anthesis *H. pentaphyllus*

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